

2018 TANKER



Freightliner/US Tanker Company

Specifications

- Engine - 450HP 12.8L Detroit Diesel DD13
- Transmission - Allison 4000 EVS Automatic w/ PTO
- Brakes - Air disc; all axles
- Front Axle Rating - 20,000 pounds
- Intermediate and Rear Axle Rating - 23,000 pounds
- Approximate Actual Vehicle Weight with full tank – 61,000 pounds
- Unit Height - 9' 9"
- Unit Length - 34' 1" with 242" wheelbase
- Unit Width – body 99" ; mirror to mirror: 117"



Specifications

- Tire Pressure - 130psi front / 105psi rear
- Coolant - 13 gallons OAT Coolant
- Engine Oil - 9 gallons 15w40
- Transmission Fluid - 34 quarts synthetic ATF
- Power Steering Fluid - 4 quarts Dexron III
- Fuel Tank - 50 gallons diesel
- Diesel Exhaust Fluid - 6 gallons DEF
- Fire Pump – 1500gpm Hale Single Stage Qmax
- Water Tank – 3,500 gallons

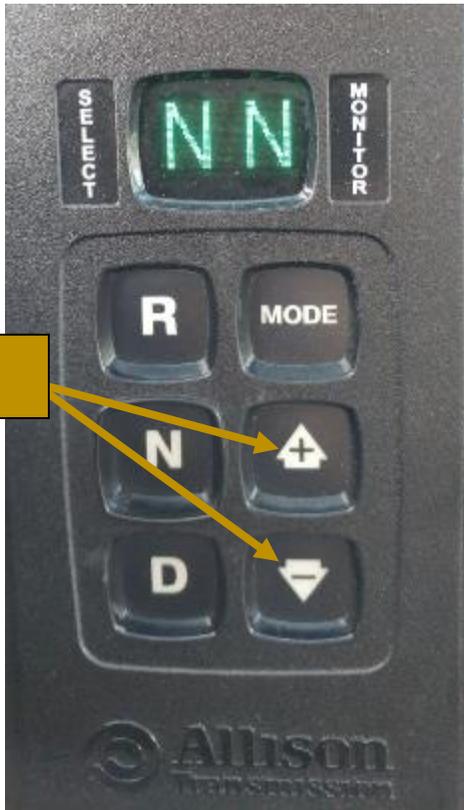


DO NOT MOVE VEHICLE

- Two warning lights – headliner and console
- DO NOT move vehicle if either light is illuminated
- Check for:
 - ✓ Open compartments
 - ✓ Extended dump chutes
 - ✓ Extended folding tank trays



Transmission Fluid Check



- The Transmission Fluid level may be checked in the cab through the keypad selector.
- ✓ The engine must be running at idle and the unit must be on level ground.
- ✓ The engine must idle at least five minutes from a cold start.
- ✓ The transmission must heat to at least 140 degrees F

Transmission Fluid Check

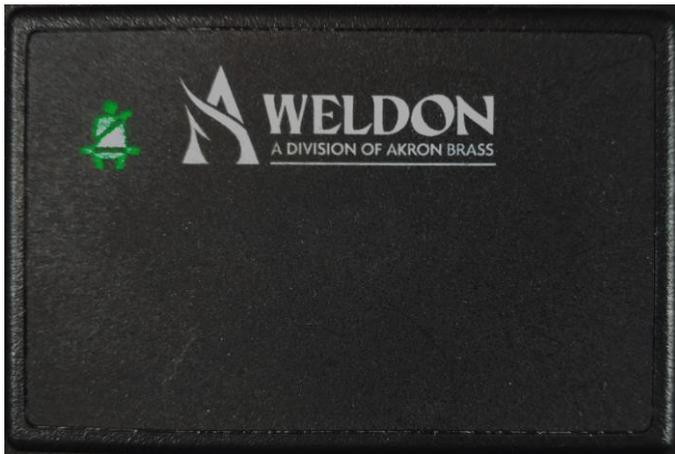


1. Simultaneously push the up and down arrows on the keypad.
2. "oL" will display on the screen
3. oL will be followed by OK, -1 thru -7, or +1 thru +7.
 - Negative indicates underfill
 - Positive indicates overfill
 - Numeral indicates the number of quarts
4. Any other message indicates a problem and CMF should be notified.
 - Always confirm the digital reading on the dipstick BEFORE adding fluid.
 - ONLY use **TranSynd** Fluid.

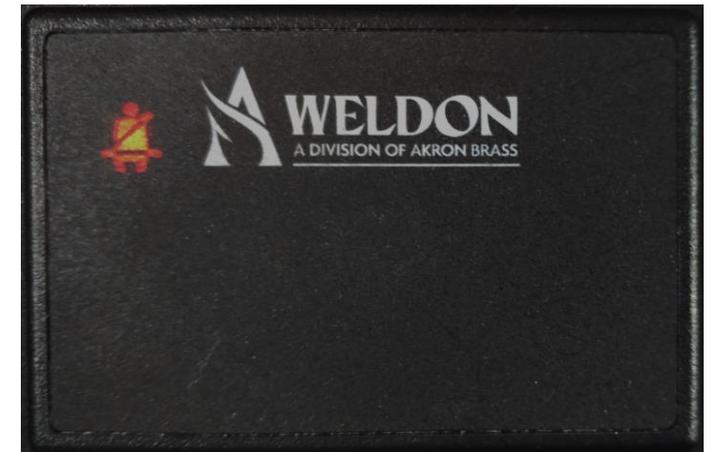


Seat Belt Indicator

**Occupant Belted
(displays green)**



**Occupant NOT Belted
(displays red)**



Reverse Camera

- Camera located below arrow stick on rear
 - Displayed on screen on center headliner



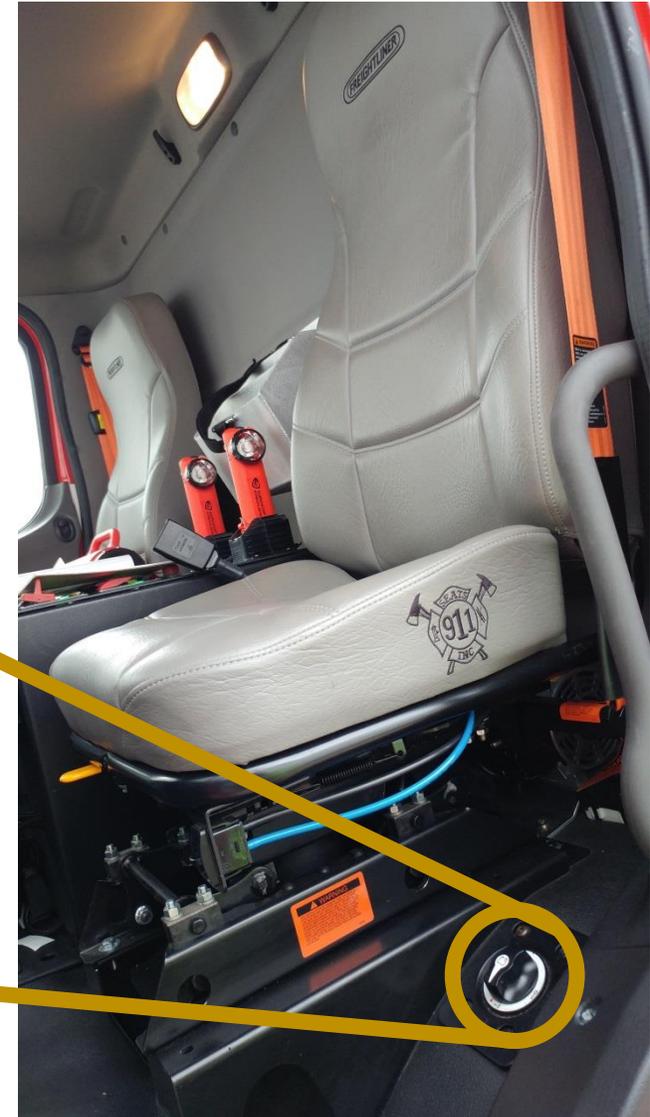
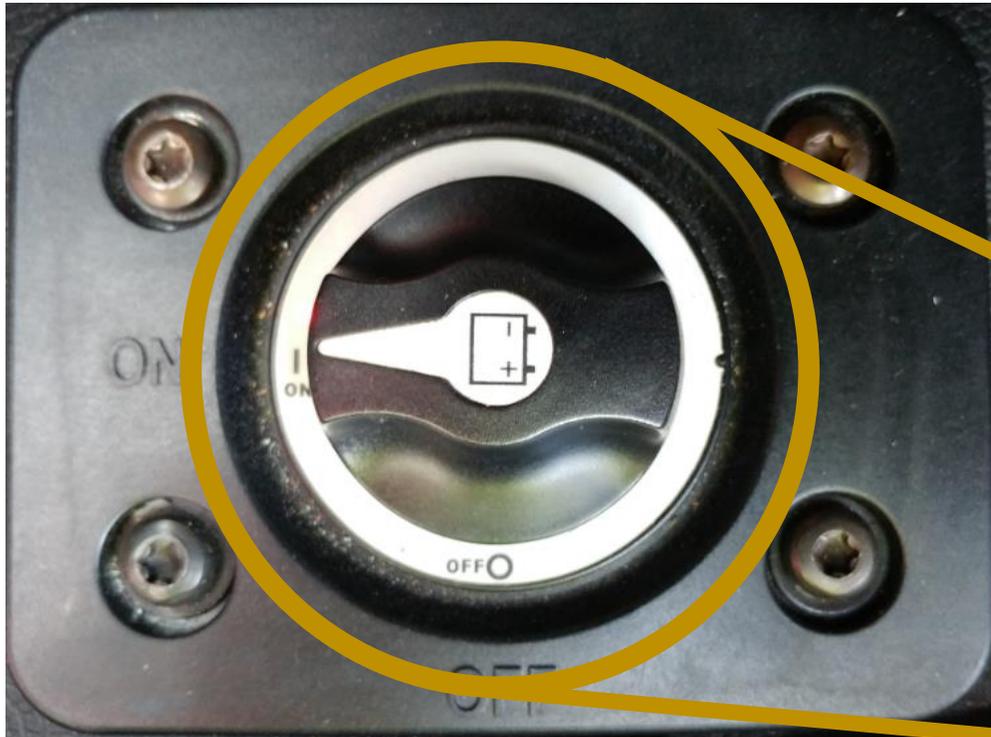
Side Cameras

- Camera located forward of the intermediate axle on both sides
 - Camera looks rearward
 - Activated by engaging respective turn signal
 - Displayed on screen in cab center headliner



Battery Master Switch

- Located on floor next to driver's seat
 - ✓ Must be on for ANY electrical power



Chassis Controls



Chassis Controls



Chassis Controls

Automatic
Traction
Control

Manual
Regeneration/Regen
Inhibit

Shutdown Override
Delays an emergency shutdown by
the ECM to allow driving to a safe
parking area



Engine Brake

(3 position switch)

- Up – High
- Center – Low
- Down - OFF

Inter-Axle Lock

Auxiliary Braking Device



CAUTION

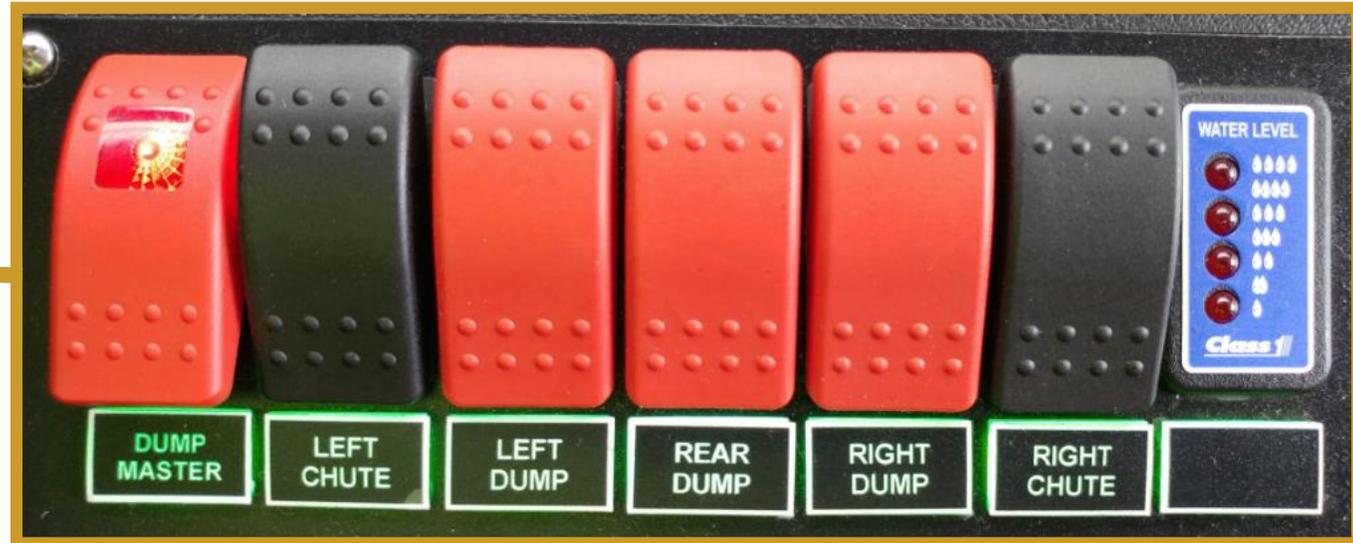
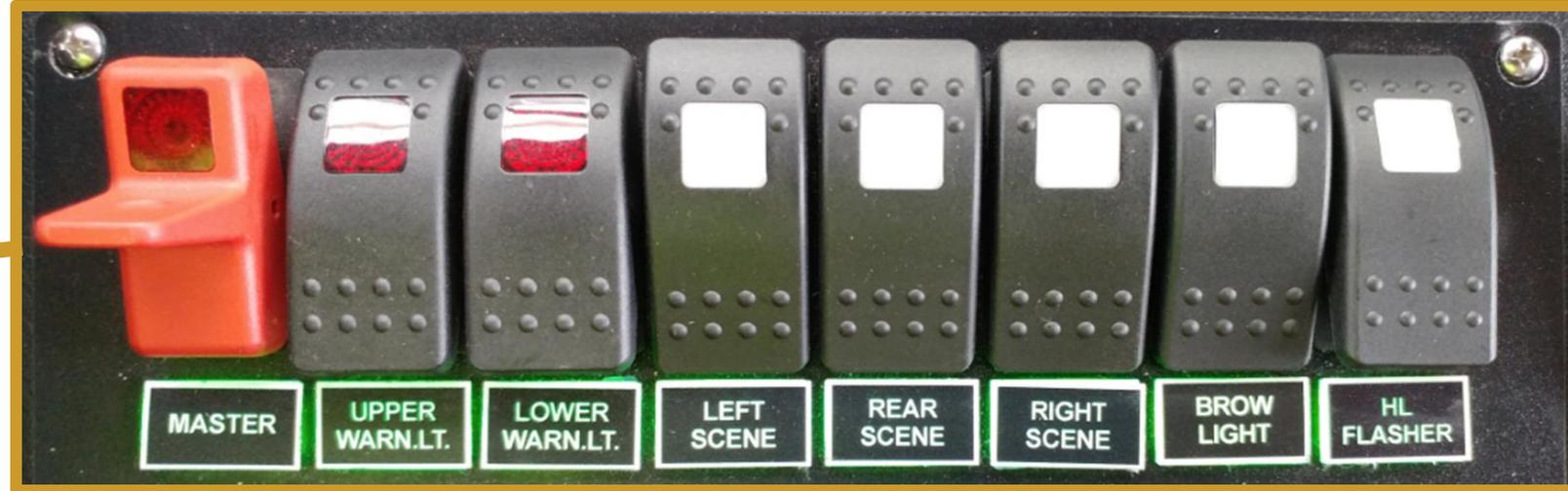
This unit is equipped with an Engine Brake.

The Engine Brake will not be used in low traction or slippery conditions.

- 3 position switch
- Up – High
 - Center – Low
 - Down - OFF

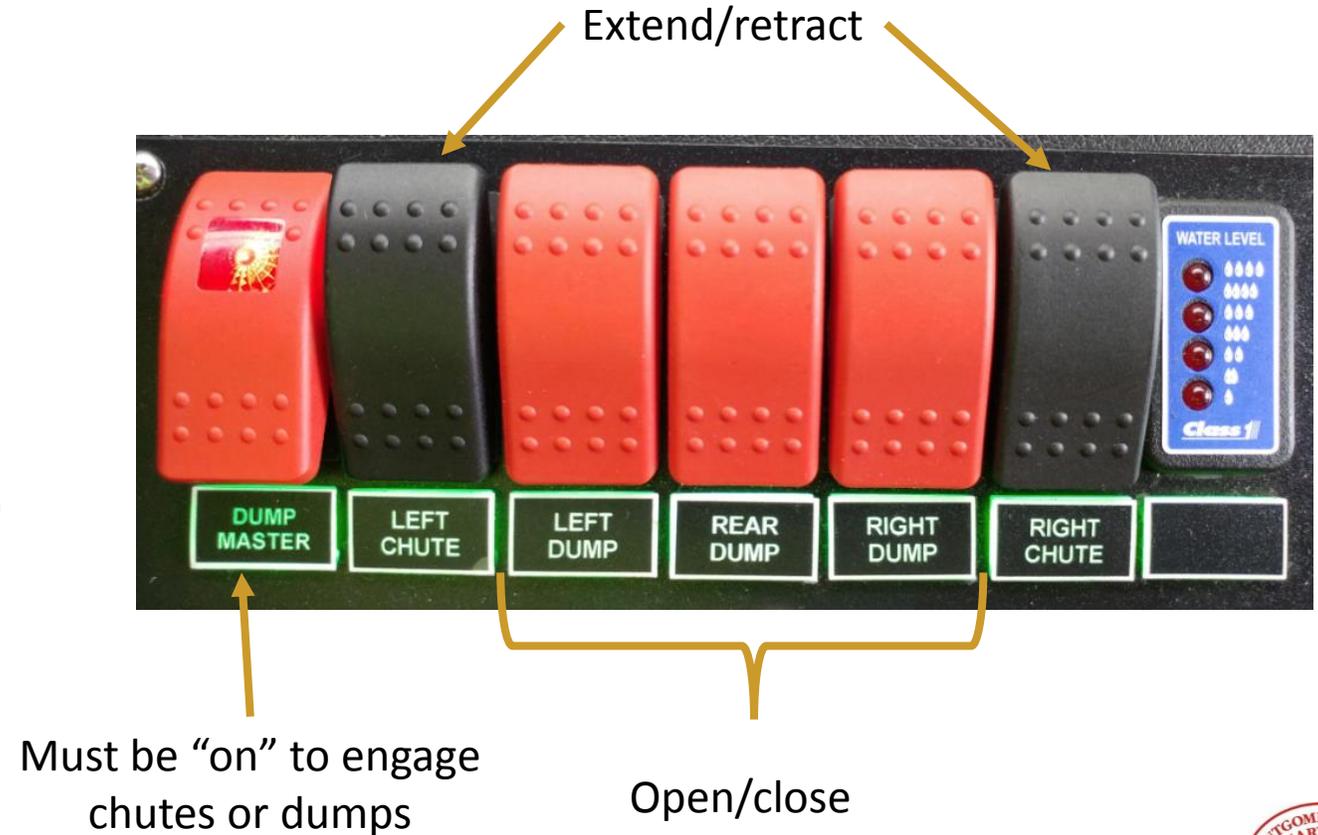


Auxiliary Function Controls



Dump Valve Controls - Cab

- Dump Master MUST be on to engage the in-cab or exterior controls
- Rear dump DOES NOT extend
- Side dumps are dual action
 1. Press black momentary switch to extend/retract respective chute
 2. Press red switch to open/close respective dump valve



Dump Valve Controls - Body

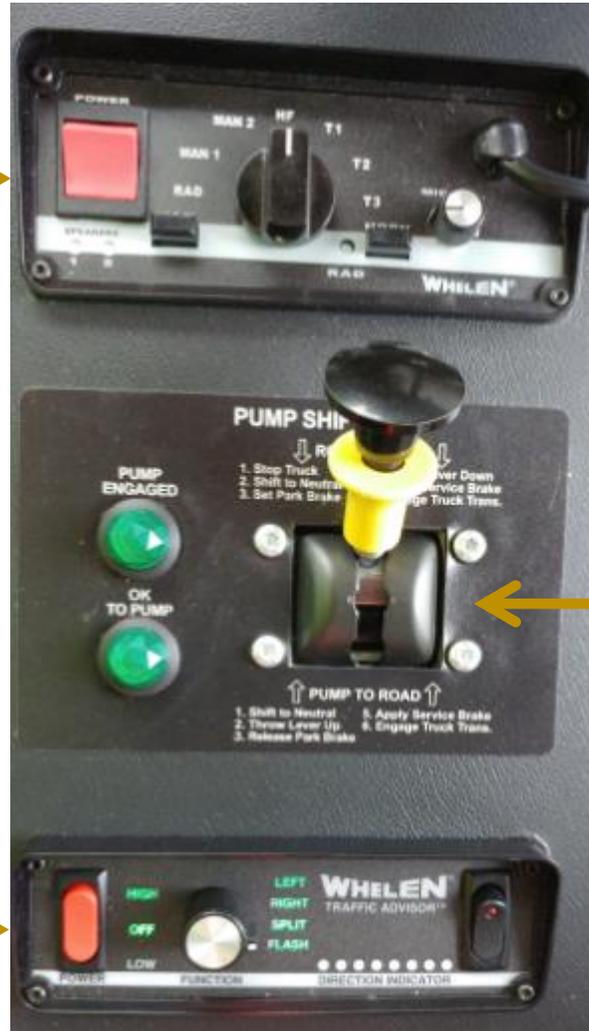
- Each dump valve has a set of controls on the vehicle exterior
 - Side dump controls are located on the rear of the vehicle
 - Rear dump control is located on driver side of the vehicle
- Dump Master switch in cab **MUST** be ON



Auxiliary Function Controls

Electronic
Siren
Control

Traffic
Advisor
Control



Pump Transfer

1. Stop Vehicle
2. Shift to Neutral
3. Set Parking Brake
4. Shift Lever Down
5. Engage Service Brake
6. Place in Drive

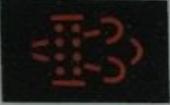
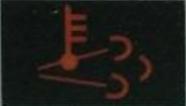
Engine Aftertreatment

- Enables compliance with EPA emissions standards – emergency vehicles are NOT exempt
- After 2006, all diesel exhaust systems have a particulate filter and associated regeneration system
 - Diesel Particulate Filter (DPF) captures soot and ash
 - Regeneration burns off the soot and ash that accumulates
- After 2009, aftertreatment systems include Diesel Exhaust Fluid (DEF) for additional treatment of exhaust gases
- There are two operator interventions necessary with these systems:
 - Active Regeneration – aka “parked” regeneration
 - Refilling the DEF tank



Engine Aftertreatment

- DPF/DEF Warning Lights

IMPORTANT	
<p>DPF Regen Needed</p> 	<ul style="list-style-type: none">Diesel Particulate Filter (DPF) regeneration is needed.If flashing, regenerate as soon as possible. Engine derate possible.
<p>Hot Exhaust</p> 	<ul style="list-style-type: none">Hot exhaust can cause fire.Keep flammables and people away from exhaust.
<p>DEF Refill Needed</p> 	<ul style="list-style-type: none">Diesel Exhaust Fluid (DEF) level is low. Engine derate likely.Refill tank with certified DEF.
<p>See operator's manual or glove compartment card for complete instructions. 24-01656-000</p>	

Diesel Particulate Filter



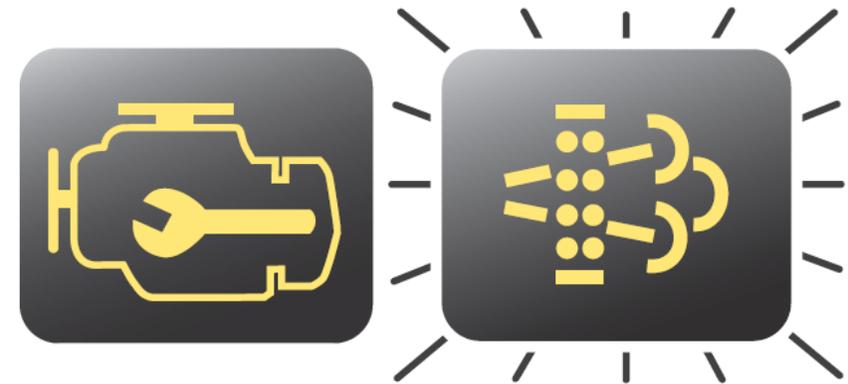
Aftertreatment Diesel Particulate Filter

- Indicates a regeneration is needed – passive or active
- When flashing, regeneration is more urgently needed



High Exhaust System Temperature

- Does not signify any need for service – regeneration occurs at high temperatures
- Keep the exhaust pipe outlet away from combustibles



Flashing DPF Light + Check Engine

- Regeneration is needed immediately
- Active regeneration is required

Diesel Particulate Filter

Passive Regeneration

- Occurs automatically as needed when driving over 40mph
 - Does not require any action on the part of the driver
- It is unlikely that MCFRS apparatus will drive enough highway miles for Passive Regeneration to complete it's cycle



Diesel Particulate Filter

Active Regeneration – “parked regen”

1. DPF lamp illuminates or flashes
2. Determine a suitable location to park the apparatus
 - Away from combustibles or items that could be damaged by exhaust heat – need at least 5 feet of clearance
 - Outdoors and NOT connected to the PlymoVent
3. After parking the unit, engage the manual regeneration
 - Rocker switch on dashboard
 - Motor rpm automatically increases to approximately 1100rpm
4. The driver must remain with the vehicle during regeneration
 - Duration varies by amount of soot in the DPF – 5 to 20 minutes

The regeneration switch is located in the center of the dash below the Engine Brake switch.



Diesel Particulate Filter

- Regeneration will stop:
 - Automatically when the motor controls sense the particulate filter is cleaned
 - Manually if the brake pedal is depressed
- Unit may remain in service during regen
- Regen will not engage when other vehicle functions are in use, i.e. pump, PTO, hydraulics
- Vehicle exhaust components will remain very hot following the regen process
 - High temperature light will illuminate

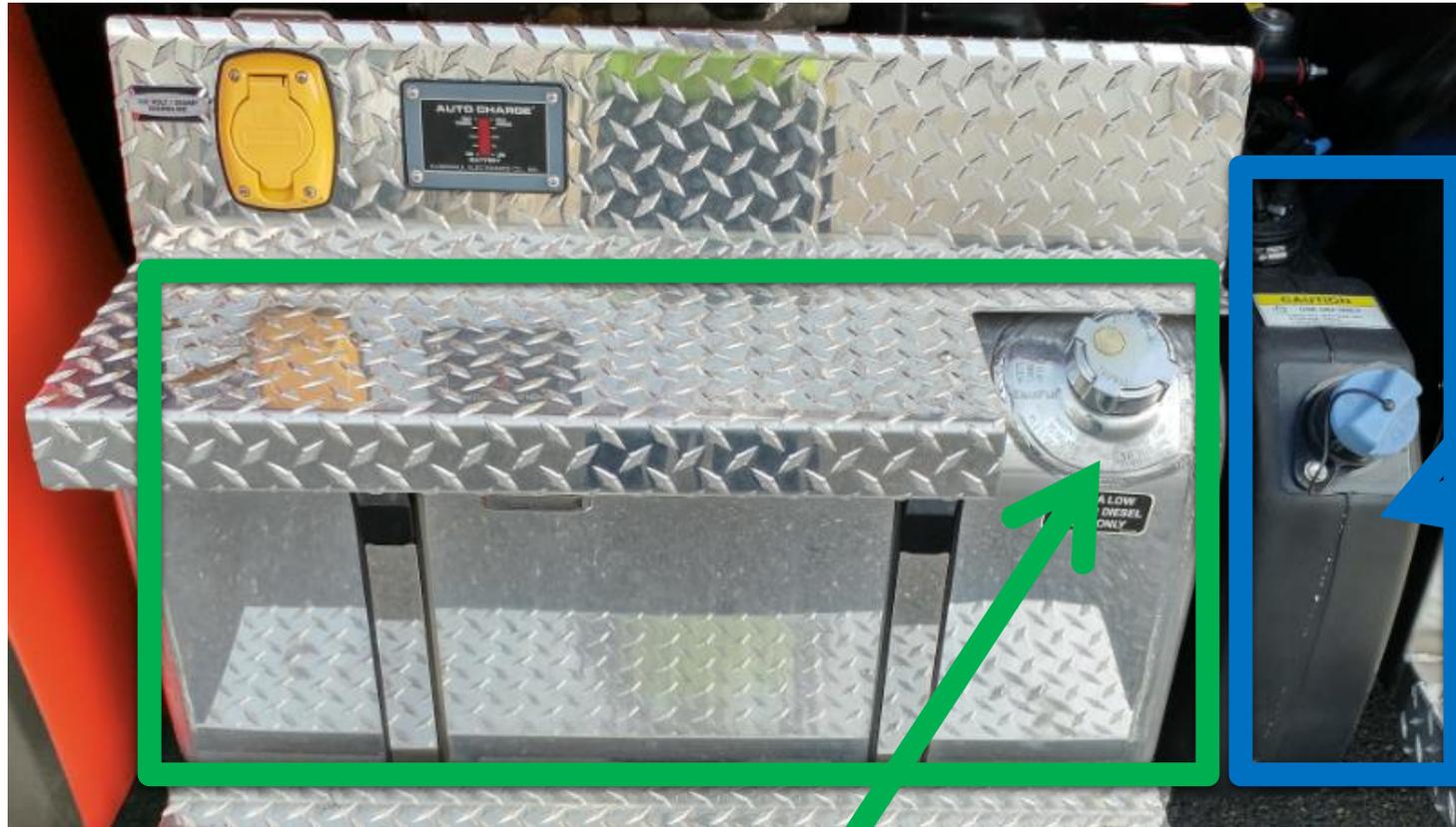


Diesel Exhaust Fluid (DEF)

- Non-hazardous solution of 32.5% urea and 67.5% de-ionized water used in post-2009 diesel vehicles
- DEF is sprayed into the exhaust stream of diesel vehicles to break down NOx emissions into nitrogen and water
- DEF is **not a fuel additive** and never comes into contact with diesel
- DEF is stored in a separate tank next to the diesel tank
 - blue filler cap.



Diesel Exhaust Fluid



Diesel
EXHAUST
FLUID Tank

Diesel FUEL
Tank

Diesel Exhaust Fluid

Contamination – Fuel vs. DEF

- Nozzle sizes
 - DEF nozzles are 0.75”; diesel nozzles are 0.87”
 - The diesel nozzle should not fit into the DEF tank
 - The cap for the DEF tank is blue and will be clearly marked
- Diesel in the DEF tank
 - Diesel will float on top of DEF
 - Small amounts of diesel can damage the exhaust system
 - If any fluid except DEF is poured into the DEF tank, contact CMF immediately and do not drive the vehicle.
- DEF in the fuel tank
 - The motor will stop running almost immediately, and the vehicle will require repair



Diesel Exhaust Fluid

Supply, Handling, and Refill

- Stocked in 2.5 gallon containers with filler tubes or in bulk barrels
 - requested as needed through normal supply procedures
- DEF crystallizes when stored for prolonged periods as the water evaporates
 - Do not use DEF that shows signs of crystallization
 - Always completely use a container to avoid storing opened containers
- Refill when the level indicator reaches 1/2 or less
 - The tank should accept one full 2.5 gallon container of DEF
 - No need to continuously top off the DEF tank
- Filler tube for 2.5 gallon containers is supplied with the case
- Spills can be safely washed down with water. DEF is not corrosive to human skin, however is corrosive to aluminum. Do not allow it to remain on the diamond tread.
- The freezing point of DEF is 12°F, however vehicles are equipped to thaw the DEF and this should not restrict use of the vehicle.
- Personal protective equipment is not necessary when handling DEF, however it will stain clothes.



DEF Tank gauge located below fuel gauge on dash.

Inter-Axle Differential

- Allows the wheels of either axle to revolve faster or slower than the wheels of the other axle
- Compensates for cornering, uneven road surfaces, and slightly different tire sizes
- Inter-axle Differential Lock
 - Sends equal power to all rear tires
 - Used during poor traction situations
 - Never engage while moving or with wheels spinning
 - Disengage once traction is regained; do not use on dry pavement



Automatic Traction Control (ATC)

- Automatically applies the service brake to the spinning wheel
- Transfers torque through the differential to the opposite wheel
 - If both wheels lose traction, the system reduces engine torque until traction is sensed
- If the vehicle is stuck and the ATC keeps reducing engine speed, disengage by pressing the “NRM/SPIN” switch on the dashboard



Rear Suspension

- Chassis is equipped with an air cushioned suspension on the rear axles
- Dashboard controller
 - Factory installed for use in conjunction with a 5th wheel tractor-trailer configuration
 - In a straight truck configuration there should be NO need for the operator to use this switch to adjust anything
- Dashboard gauge
 - Displays the pressure level in the rear suspension



Suspension height control – DO NOT USE

Suspension air pressure

Fire Pump – Hale Qmax

- Single Stage
- Rated at 1500gpm
- Hale Total Pressure Master
- Hale Thermal Relief Valve
- Trident Manual Air Primer
- 6 total discharges
 - 2 crosslays
 - 2 driver's side discharges
 - 2 officer's side discharges (1 LDH)
- 3 total pump intakes
 - 2 side main
 - 1 driver side auxiliary



UST FIRE APPARATUS				PERFORMANCE		
PUMP MAKE	HALE	D.O.M.	01/2018	GPM	PRESSURE	ENGINE RPM
MODEL NO.	QMAX 150-23L			1503	150	1345
SERIAL NO.	H16144			1050	200	1510
TYPE	SINGLE STAGE			750	250	1650
CAPACITY	1500 GPMGPM			GOVERNED SPEED		1972 RPM
				GEAR RATIO		2.28 TO 1



Pump Panel Layout



Pump Panel Layout



Pump Panel Layout



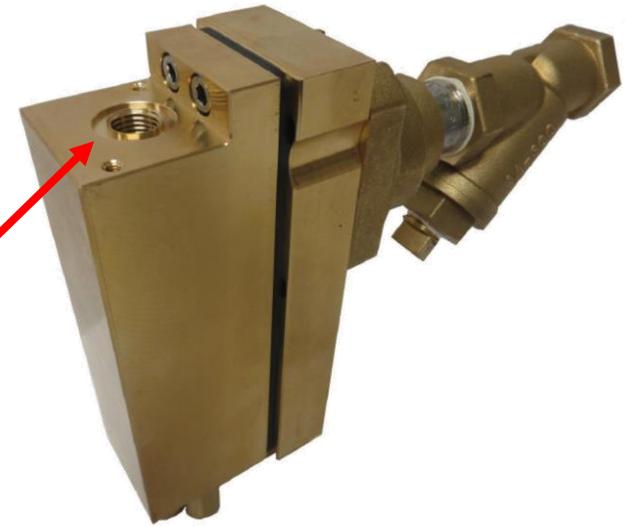
Trident Air Primer

Operating Characteristics

- Utilizes air supplied by the chassis air brake system to operate the pump primer
 - 15.6 cubic feet per minute
- Very low impact on vehicle electrical system - 0.4 amps
- Generally primes faster than traditional mechanical primers
 - 27' vertical lift capable
- Tanker is equipped with a manual system only
 - Automatic systems exist and will be on the 2018 Pierce Engines

MANUAL
AIR
PRIME

*Air supply
ports –
chassis air
comes in*



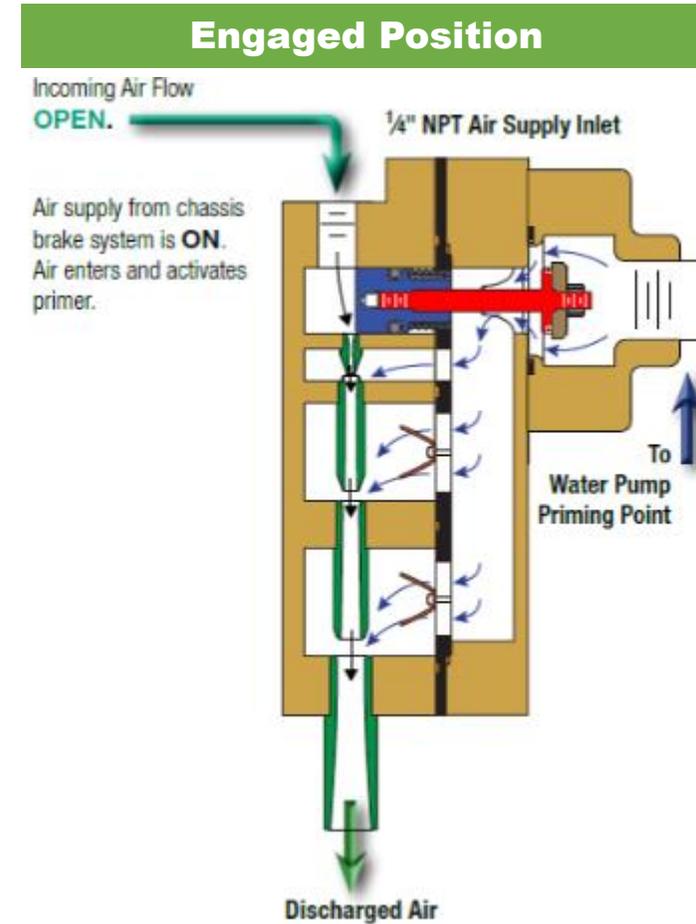
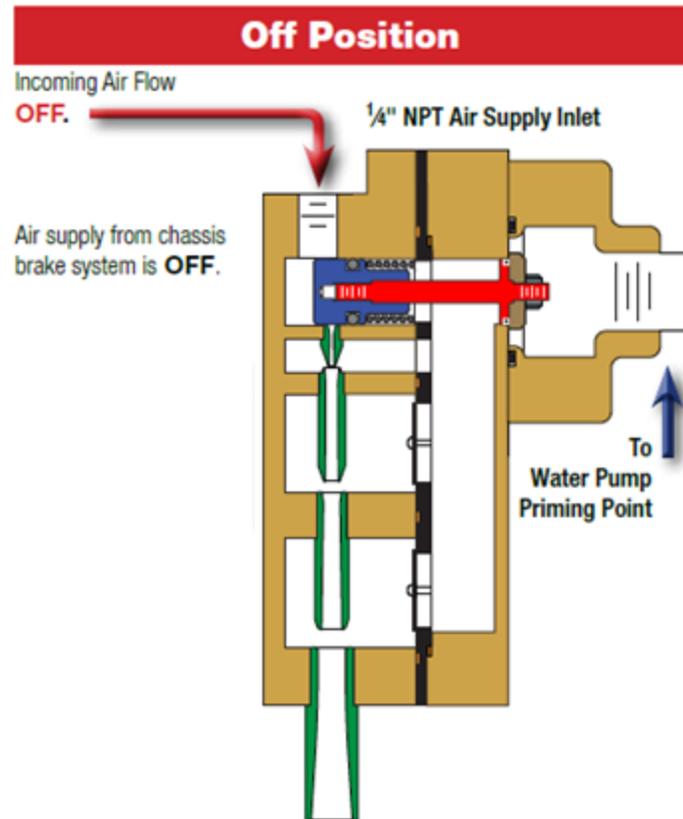
Trident Air Primer

- No internal motor, solenoid, or cables
- Brass and steel construction
- Primer design provides automatic draining to avoid freezing
- No moving parts to create a vacuum
- No lubrication necessary
- No limitation on primer engagement time
 - Only limitation is avoiding running a dry pump in gear



Trident Air Primer

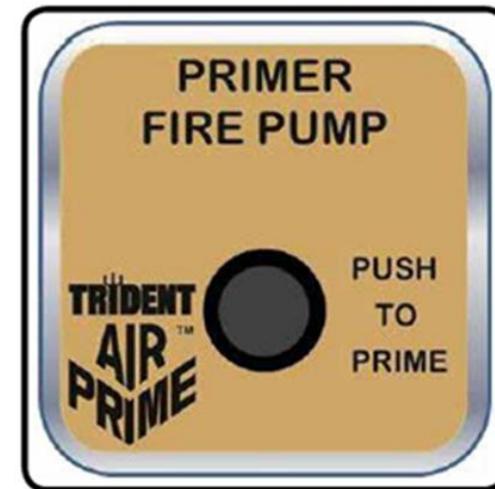
Internal Operating Mechanism



Trident Air Primer

Manual System

- Operator depresses the PUSH TO PRIME button for the main pump or desired intake
- Maximum engine speed of 1000rpm
- Press and hold the priming button until discharge pressure begins to rise
- Primer will only engage when the button is pressed



Dual “Tank to Pump” Valves

- Features dual tank to pump valves
- Front and Rear
- Allows all tank water to be used when parked on grades
- Out-Open/In-Closed
 - NOTE – this is opposite of an engine company



Water Tank

- Total capacity of 3,500 gallons
- Two direct fills located at the rear
- Three dump valves
- Two tank-to-pump valves



Side Dump Chutes

- Dual action air actuated chutes
 - Extend 10.5 inches
 - Controlled from cab console or rear of unit
 - Dump Master MUST be on for dump controls to work from ANY location
- Side dumps are dual action
 1. Press momentary switch to extend chute
 2. Press switch to open respective dump valve



Portable Folding Tanks

- Each tanker has TWO Fol-Da-Tank Single Lane Folding Tanks
 - Switches to lower rack located at respective pump panel
 - Each folding tank holds 2000 gallons
 - 8 feet wide
 - 14 feet long
 - 29" tall



Portable Folding Tanks

- Accessories to maximize the efficiency of the Single Lane Tanks include:
 - 6" elbow for dump site engine intake
 - Flex-Lite interconnector hose
 - Low-flow strainer
 - Jet siphon
 - Mounting plate and flange for interconnector



Driving a Tanker

Remember that you are driving a vehicle with 14 tons of fluid pushing and pulling on you.

This creates a huge amount of energy when accelerating, braking, and turning. All vehicle movements are exaggerated by this weight.

Given the exact same road conditions and configuration, a Tanker will react much more intensely than an Engine.

Slow down and plan your next move.

